
The Value of Military Industrial Offsets

By

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Introduction

Kremer and Sain acknowledge there are differences among authors on the definition of military industrial offsets. They have identified at least three common elements among them. First, offsets are compensation in a non-monetary form. Second, their intended purpose is to compensate buyer costs. Last, offsets are often a condition of the sale of military hardware (Kremer and Sain, 1992, p.1). So, a solid definition of offsets, what the British call industrial participation (“Offsets In Defense Trade”, *DISAM Journal*, 21:3, p. 80) and what Canadians call “industrial benefits” (Marvel, p. 44), is a requisite of this discussion. One definition is comprehensive.

Offsets are industrial compensation practices mandated by many foreign governments when purchasing defense articles [from U.S. manufacturers]. There is a definition developed in 1986 by a U.S. government interagency group: ‘...offsets are industrial compensation practices required as a condition of purchase in either government-to-government or commercial sales of defense articles and/or defense services as specified in the International Traffic in Arms Regulations. In defense trade, offsets include mandatory co-production, licensed production, subcontractor production, technology transfer, countertrade, and foreign investment. Offsets may be direct, indirect, or a combination of both. Direct offsets refer to compensation such as co-production or subcontracting, ‘directly’ related to the system being exported. Indirect offsets apply to compensation unrelated to the export item, such as foreign investment or countertrade’ (“Offsets In Defense Trade”, *DISAM Journal*, 20:2, p. 67).

Kremer and Sain agree with these categories of offsets (Kremer and Sain, p. 2). And, both of these definitions are consistent with that recognized and used by the U.S. government’s Office of Management and Budget (OMB, p. 2). “Three common types of international military sales that involve offsets (sic): (1) foreign military sales (FMS); (2) foreign military financed (FMF) direct commercial sales; and (3) “pure” direct commercial sales (Russin, 1995, p. 108). Regardless of the acquisition context, offsets offer many benefits. Some of these major advantages will be discussed in this paper along with some major disadvantages, though there are also other minor advantages and disadvantages that will not be addressed here are. In addition, some improvements in how offsets are handled that could mitigate these disadvantages are discussed.

On the surface, most military industrial offsets appear to be a strange approach to conducting business. In some cases they can even become what Congressman Ron Wyden (D-Oregon) has called “. . . just bizarre . . .,” referring to an offset agreement associated with the sale of the F/A-18 to Spain by McDonnell Douglas Corporation (Petty, p.66). But, since the dire circumstances in which they were begun, World War II’s aftermath, most European countries and Japan have come to expect them, and in some cases, even demand them, when doing business with U.S. defense firms. For reasons that will become obvious here, these procuring nations highly favor offsets. This anomaly in normal business practices has nonetheless become routine practice with foreign governments’ eye toward improved industrial base positioning and improved technology.

In the cold war environment after World War II, U.S. defense firms were a dominant force and today continue to play a major role in the international arms market. The U.S. government initially sought co-production and licensed production of U.S. weapon systems in defense trade with foreign governments to help rebuild the war ravaged economies and industrial bases in Japan and Western Europe the North Atlantic Treaty Organization (NATO) countries during the late 1950s and 1960s. The first co-production efforts involving U.S. defense contractors were in Europe for the F-105 Starfighter aircraft and the Hawk antiaircraft missile system in the late 1950s (Wilson, p. 79). The philosophy was and remains “nations tend to align politically, economically, and diplomatically with other nations with whom they trade arms (Petty, p.74).” It was a concept developed by buyers vice sellers in the defense industry. In terms of avenues to implement offset agreements, logistics provides ample opportunities.

European countries demand more offsets than any other region by far. They accounted for over two thirds of all offset agreements between 1993 and 1996, specifically, the United Kingdom, the Netherlands, and Switzerland accounted for 55 percent of all new agreements. Europe accounted for more than 85 percent of all agreements in 1995 and 1996 (“Offsets In Defense Trade”, *DISAM Journal*, 21:3, p. 80). Usually, the larger the contract, the higher the offset since they are typically expressed as a percentage of the contract value (Mathews, et al., p. 28).

Logistics is a term used to describe everything required to maintain and sustain a weapon system operationally throughout its useful life. Sols correctly identified logistics areas which readily lend themselves to offset agreements. As an expert in logistics, he believes at least five areas should be addressed in offset agreements; (1) supply of spare parts, (2) weapon system maintenance, (3) training and technical assistance, (4) documentation, and (5) tools and test equipment (Sols, p. 30-31). Offsets are overwhelmingly tied to the aerospace industry. It is not only the weapon system itself, but also the tens of thousands of parts and components per aircraft with ample advanced technology that lend themselves so readily to offset opportunities (“Offsets In Defense Trade”, *DISAM Journal*, 21:3, p. 62).

There is no agreement in terms of what constitutes a successful offset program. But, there are two common themes. First, an offset agreement is deemed successful in the subjective judgment of the parties. That obviously varies with the parties involved. The second theme centers around the survival of the offset agreement. Simply put, an offset agreement’s success is defined as the implementation and execution of the agreement in a way that all parties are satisfied with the results (Kremer and Sain, pp. 32-33). Experienced sellers and experienced buyers, therefore, recognize a concept that opposes the concept of liquidated damages, that of “best efforts”. This is a moral vice legal commitment of the selling firm to fulfill its obligations. Though it is a preferred position of sellers because it reduces financial risk, it is not a generally mandated policy of companies in offset contracting (Marvel, p. 44). And, it is matter of business ethics and good will toward a company’s customer. Each is aware a single default on a promise to fulfill its offset obligations would effectively end it ability to conduct similar business with that country in the future. So, given the assumption all parties operate in an environment of good faith, what are the major arguments for and against the use of offsets?

Advantages of Offsets

There are some distinct advantages for countries to participate in offset agreements that accompany arms sales. They include cost and government policy impacting it, national and allied security concerns, the impact on employment, and offset agreements’ impact on technology transfer.

Buyer Nation Motivation

Buyer nations' view offsets in a multi-beneficial way. Their concern is more of appeasing and even pleasing their public over the issue of buying from a foreign supplier.

Considerations of the political acceptability of arms purchases from a foreign source, the maintenance and development of domestic defense and commercial industries, and the preservation of foreign exchange are often important, if exogenous, factors in the development of weapons procurement policies in many nations, including the U.S. In fashion, the arms policy of the U.S. government is influenced by foreign policy/national security considerations that sometimes conflict with economic efficiency (Eisenhour, p. 27).

In terms of the internal politics in foreign countries, offsets offer an avenue of allowing the buyer government to justify purchases from a foreign source on grounds other than it assists in a larger picture of cooperative defense. Offsets keep jobs and money in the buyer country's economy (Eisenhour, p. 28).

Cost

Though requiring countries no longer necessarily need offsets to recover from the ravages of a war or other economic calamity, most European countries now require offsets because they ease the burden of large defense purchases on their economies. They also increase or at least preserve their own domestic employment, allow them to gain newer, more highly desirable technology, and promote targeted industrial sectors ("Offsets In Defense Trade", *DISAM Journal*, 20:2, p. 67).

U.S. and Allied Common Security

One of the biggest advantages, the main reason the U.S. government tolerates offset agreements, deals with the issue of common defense among allies.

In efforts to provide national and alliance defense at the lowest possible cost [a debatable point among a number of other authors], nations are looking at cooperative ventures in order to share the skyrocketing R&D and production costs of defense equipment. At the same time, individual companies seek international partners as a way of sharing technology and improving their own technological skills (del Castillo Masete, p. 118).

Arms transfers enhance the preparedness of allies and friends by providing them with modern means to defend themselves against foreign aggressors. [They] contribute to U.S. power projection capabilities when such [arms] transfers are agreed to in whole or in part as consideration for the granting of basing or access rights for U.S. forces on foreign soil. Offsets indirectly contribute to U.S. power projection to the extent that where offsets are a condition without which an arms transfer cannot take place [if the offset is not granted], the U.S. would not receive the sale's external advantages, which may include base or access rights (Eisenhour, p. 27).

Though the cost inefficiency of co-production is well known and well documented, there are also some distinct and overriding advantages to it.

Arms transfers promote rationalization, standardization, and interoperability in that they result in allies and friends using common weapon systems. Co-production and licensed production contribute positively and directly in this area. Co-production and

licensed production provide incentives for allies to standardize on common systems, and enhance the ability of allies to maintain and support the systems of other alliance members (Eisenhour, p. 27).

Nonetheless, offsets have served important U.S. foreign policy and national security objectives, such as increasing allied countries' industrial capabilities, standardizing military equipment, and modernizing allied forces. Nearly all U.S. defense trade partners require offsets, sometimes exceeding the value of the contract ("Offsets In Defense Trade", *DISAM Journal*, 20:2, pp. 67-68). The U.S. government generally opposes them, but has taken only token action to decrease their use (Marvel, p.43). It maintains a non-interference policy toward offsets. "No U.S. government agency may encourage, enter directly into, or commit U.S. industry to an offset arrangement in connection with the sale of defense articles or services to a foreign government. [The] decision whether to engage in offsets . . . rests entirely with industry (O'Conner, p. 108)." "The essential difference between the U.S. [offsets] policy and those of most other countries is that the U.S. requirements are based on national security concerns rather than economic ones...[accordingly, there are] statutes and regulations that limit the ability of foreign contractors to sell [defense items] to the U.S. government (Eisenhour, p. 31)."

Employment

From the viewpoint of the U.S. government and the work force in America, there are at best few employment advantages. But, these may only be a perception or even an assumption. Though there is disagreement among authors in terms of offsets' impact on employment in the U.S., the truth is they may even be beneficial. In 1988, the Office of Management and Budget (OMB) concluded offsets may have a minor negative impact on employment. They cite the reason is because of the insignificance of offsets' impact as firms producing weapons for foreign sale represent only 200,000 to 300,000 jobs, about one half of one percent of private sector employment. The attribute may well be because of sole sourcing of U.S. made goods to procuring countries. In fact, OMB conjectured their impact may actually be positive (Kremer and Sain, p. 18).

Technology Transfer

Two factors determine whether technology transfer is harmful or beneficial, the technology itself at a particular juncture and the timing of the transfer. A firm must judge how much the transfer of technology will hurt it in future competitions against a now technically enhanced competitor. Kramer and Sain state firms tend to transfer only technologies that will not hurt their competitiveness in future business. It is usually technology they believe will become outdated in two to three years. Technology is perishable with time. If held too long, it becomes worthless. If transferred too soon, it harms the firm's competitiveness in a current and near future market (Kremer and Sain, pp. 23-24).

Technology transfer has its advantages. But there are also some major draw-backs which will be examined in the disadvantages section below. Relatively few countries are capable of both developing and producing military aircraft. From the viewpoint of the purchasing country, technology transfer is an obvious, big benefit. It not only upgrades their weapon systems for defense, it also positively impacts their commercial economy, the industrial base. "From a military perspective, not all offsets are bad. Properly controlled, [technology transfer] can promote national security (Petty, p. 76)." It seems this is through standardized technology used in common equipment.

Disadvantages of Offsets

The most obvious question to ask about offsets is are they cost effective? The answer to that question is almost always no. U.S. manufacturers attempt to address the issue of higher cost due to small domestic orders by selling weapon systems to U.S. allies, preferring the outright sale of systems to any offset agreement for reasons discussed above. Just as there are a number of advantages, there is a seeming plethora of disadvantages. Among them, and some of the most important ones, are cost effectiveness, the state of procuring nations' economies, negative effects on U.S. employment, and technology transfer to potential enemies.

Cost Effectiveness

The prime contractor and the U.S. government do not see as many advantages to providing offsets. From the defense firm's vantage, offsets provide almost no cost advantages in the sale of the primary weapon system. But, there may be opportunities provided in logistics to support the main item in the areas of maintenance and replacement parts, training, etc. In these cases, the prime contractor may find itself in a position to broaden its influence into previously forbidden markets. Though cost efficiency is listed below as a disadvantage of offsets, the U.S. government sees some value in allowing them.

From the industry's viewpoint, they represent a drain on a firms' resources as well as those of the nation vice representing a form of opportunity. But, arguably, as a result of providing offsets, firms have broadened their concept of customer relations. They have changed their orientation to one of customer-focused, economic, planning, business development, and cultural analysis instead of simply their product's technical merit and price. Contractors, therefore, must now know their customer well enough to be able to offer him an offset attractive enough to induce a purchase (Marvel, p. 44). That obviously requires much more time and effort for a company. But, that, in turn, costs money. U.S. defense firms have come to view offsets as a necessary evil of doing business overseas. Without them, they simply cannot effectively compete in offshore markets. Offsets are viewed by firms as a marketing cost.

The cost of offsets is difficult to measure and varies greatly in different situations, but it can be substantial. Military weapon system production lines, such as aircraft, do not use mass production techniques, but instead design production to minimize cost related to maximum anticipated yearly deliveries. Also, the relatively small quantities ordered by the military raise the cost per unit, making overall cost more sensitive to changes in unit volume. Thus, the larger the order quantities, the more dramatically the per unit cost falls. Offsets penalize both the foreign purchaser and the U.S. taxpayers. Then, why offset? If given the opportunity, foreign governments prefer to spend national budgets domestically. By offsetting the high-priced import of a major weapon system, a government can redirect expenditures back into its domestic economy up to [and sometimes exceeding] the value of the offset agreement. So instead of spending money abroad, it is actually spent at home. Moreover, the offset may also help promote or preserve an indigenous defense base, infuse new technology into the economy, or introduce domestic firms to potential export partners ("Offsets In Defense Trade", *DISAM Journal*, 21:3, p. 58-59).

Offsets can alter the nature of arms transfers. Offsets can introduce rigidities and increased costs into the procurement process, because they may prevent the supplier from obtaining needed commodities [parts and supplies] from the most cost-effective sources. They can divert resources, which may enhance military capability at the expense of a more efficient use of those resources. However, in many cases, without the cooperative efforts resulting from offsets, the sale would not be consummated (Eisenhour, p. 27).

Co-production was among the first forms of offsets to be employed by U.S. firms and their customer countries. It is the most inefficient and costly offset form. It puts a much heavier burden on the buying country than it would experience had it purchased the weapon system outright from the U.S. manufacturer. Most, if not all, of the research and development (R&D) is complete when a co-production agreement is undertaken, what would have been a potential savings to a purchaser. Technical data can be transferred to the buyer country with or without compensation. In addition, a duplicate assembly plant is often established in the purchasing country. Parts and component sourcing is also negotiable. Co-production deprives the U.S. producer of production volume and creates a duplicate facility, which will certainly have much less volume than the original (U.S.) producer's factory. This establishes a higher average cost in both the U.S. facility and in the buyer's facility ("Offsets In Trade Defense", *DISAM Journal*, 21:3, p. 60).

The State of Economies

Just as important as obtaining offsets, a procuring country must also carefully consider the context in which they plan to use offsets in attempting to build its industrial base. One obvious example is United Arab Emirates (U.A.E.) difficulties in convincing local investors to put their money into the long-term industrial, educational, health, or service programs covered in offset agreements vice into more immediately profitable sectors like oil and real estate. For the U.A.E., they fight a dual problem with the marked reluctance of Western industries and investors to put money and technology into the U.A.E., unless forced to do so via offset commitments (Bonsignore, p. 19).

Employment

As stated earlier, offsets make possible sales from prime contractors to foreign countries that would not otherwise occur. This sustains prime contractors' manufacturing operations that could be in the process of depleting U.S. military orders, especially during periods of decreased budget authority. "Major [prime] contractors know that offsets can hurt their workforce, their subcontractor base, and potentially even their product quality. Yet they accept offsets as a necessary evil to be endured in order to sell in the international market (Petty, p. 68)." Offsets also encourage cooperation among U.S. firms in meeting their offset obligations.

Notwithstanding the perceived negative impacts offsets have on employment described above, Kremer and Sain state offsets' perceived negative influence on U.S. employment are due to two reasons. First, parts produced overseas instead of being produced domestically cost jobs in the U.S. Second, jobs are lost because items are imported to the U.S. in order to fulfill offset commitments (Kremer and Sain, pp. 17-18).

Technology Transfer

The transfer of advanced technology is a concern for the U.S. government. This concern falls into two areas. First, if the transfer of technology occurs incorrectly, it will erode the military industrial base because it increases competition from foreign contractors in all three tiers of the industrial base. The second area of concern is the effect foreign suppliers have on U.S. war fighting capability because of potential reliance on foreign made parts (Storer, p.13). "The industrial base has strategic impacts on the defense, economy, and political strength of a nation (Petty, p. 75)." "... [The chance that advanced technology will be compromised ... is increased not only because of its proliferation, but also because foreign firms have less concern for safeguarding technology they do not own (Storer, pp. 10-11)."

According to Kremer and Sain, most authors agree there is a likelihood the lower two tiers, subcontractors and parts suppliers, are negatively impacted because the majority of offset agreements involve subcontracting parts production to foreign companies. These often replace U.S. suppliers. They also state direct subcontracting for parts have the most likelihood of an adverse impact. This happens because it is the prime contractors that negotiate offset deals to their own advantage, then pass on the obligation to fulfill it to the lower tiers. Prime contractors typically have more resources than the lower tiers and are thus better able to fulfill their obligations. The increased competition from foreign firms further press the lower two tiers to perform more efficiently. But, that generally leads to lower cost and higher quality in the end item - not a negative impact in the longer term. This brings the discussion to the second area of concern, the effect foreign suppliers have on U.S. war fighting capability because of potential reliance on foreign made parts (Storer, p.13).

There is always the danger U.S. firms could be driven out of business due to competition from foreign firms. "... [F]oreign production represents a source of additional competition which may reduce the U.S.' share of the market, and hence, the industrial base (Storer, pp. 11-12)." This forces the U.S. government into decisions regarding tradeoffs for cost versus national security. It has chosen the latter (Kremer and Sain, p.19-21).

Small and medium defense subcontractors are the real offset losers. A 1994 Government Accounting Office (GAO) report clearly summarizes the problem of offsets to the subcontractors. Once established through offset obligations, foreign producers have become highly competitive with U.S. subcontractors, prompting the U.S. prime contractors to maintain long-term supplier relationships with the foreign customers' industries. These relationships may benefit the U.S. prime contractors. According to an industry spokesman, these supplier relationships may even reduce the prime contractors' prices, but at a cost to the U.S. industrial base (Petty, p. 68).'

A Parts Shortage for Military Equipment is a Real Concern

"... [A]s a result of offset agreements, some parts are no longer manufactured in the United States. It is possible that politics or war might deny the U.S. access to critical parts when they are needed. It would take up to two years to restart dormant capability in the United States (Storer, p. 13)."

Improvements

These are distinctly negative outcomes to participating in offset agreements. But, the consensus of opinion among writers is there are three mitigating factors, or reasons to believe offsets are not as bad as many authors say. First, for companies fulfilling offset agreements, buying countries often record credits at a rate greater than one-to-one. Kremer and Sain cite General Dynamics' (GD) experience as an example. Their worldwide experience is they need invest only four cents to receive a dollar's credit toward fulfilling its offset obligations. Second, because offset obligations are performed over the span of as much as a decade, they are fulfilled in later year dollars worth less than current year dollars. Thus, the value of the offset is reduced relative to the sale's value. Finally, some companies are able to compensate for lost profits with increased business in other areas. They are able to expand the scope of a transaction, creating more opportunities for profit in areas like training, service agreements, and an improved market position (Kremer and Sain, pp. 18-19). Individual countries are adapting to the need for better offset management/credit administration. Over and above these factors, there have been specific actions taken by parties who have been offset participants in the past. In addition, conditions are evolving which would lead some to believe offsets are not as bad as they once thought. Governments have taken specific actions to further refine/improve offset administration.

As examples, the Ministry of Defense in Finland has established an Offset Committee to oversee and judge the quality of work submitted for direct and indirect offsets. The contractor must apply to the Committee before settling a deal for offset credit. And, the work must be accomplished within ten years of the end of the contract performance period (Bickers, p. 519). Similarly, U.A.E.'s government has a body for offset administration called the U.A.E. Offset Group, to address the U.A.E.'s problems cited above (Bonsignore, p. 13). These bodies also minimize the likelihood the relationship a U.S. firm's relationship with a foreign government will sour.

Another approach is to replace the offset arrangement with a newer, more easily controlled arrangement to achieve the same goals. The Independent European Program Group (IEPG), now the Western European Armaments Group.

In 1986, an IEPG report, *Towards a Stronger Europe*, identified the need for *juste retour*, a fair return, in the form either of technology transfer or work sharing...for a purchasing country's investment in a weapons program. While the concept of *juste retour* is similar to offsets in that it seeks to confer an economic benefit on a nation acquiring military systems from another, it differs in operating on a broad, long-term basis rather than project by project. To substitute *juste retour* for offsets, the IEPG members agreed that national contracting procedures would remain in place but that awards would be based on 'the most economic offer,' regardless of the bidder's country. It requires a bureaucracy to implement and has all of the disadvantages associated with attempts to manage any sort of economic activity. Moreover, it may be difficult to allocate work shares to the satisfaction of the governments. Despite the drawbacks of *juste retour*, it does have advantages over transaction-specific offsets. First, defense trade is and has been anything but *laissez-faire*. Interests of national security, balance of trade, and industrial bases constantly influence proposed transactions; the only question is how this influence is managed. *Juste retour*, by contrast [to offsets], helps to achieve more efficient development and production, while conferring economic benefits on the participants. It can consider the region-wide effects of sales and technology transfers, and it can produce arrangements more understandable than offset agreements. A fair test of *juste retour* will have to wait until a European Defense Equipment Market has been established and there is an adequate experience in managing cross-border weapons development and production (Wilson, p. 74-75).

One method of assisting in the increased cost of offsets is in the European market's continued move toward economic consolidation, eliminating some of the duplication, at least on the European continent. "Dropping the remaining national barriers within Europe could reduce costs by 12 to 20 percent, according to a study for the European Commission, and could provide an edge in competing with the U.S. The continued division of European defence aerospace compounds U.S. (sic) advantage in economies of scale. (Isby, p.11)."

As of 1990, U.S. Department of Defense policy authorized administrative costs associated with the implementation of offset agreements between a U.S. defense contractor and foreign government customer to be included in the price of the items offered for domestic sale (O'Conner, p. 108). Because offset agreements could unduly place the U.S. government at financial risk, DoD will still not allow itself to be a party to any offset agreement and assumes no obligation to satisfy the offset requirement or bear any of its associated costs (O'Conner, p. 109).

Storer voiced a common criticism of the way offsets are managed by the government, in that there was no one agency or organization to track the impact of offsets on the U.S industrial base (Petty, p. 67) (Storer, p. v). So, the U.S. government has taken statutory and regulatory steps to

control offset agreements. For example, it has assigned the Department of Commerce as the single focal point for annual offset reporting on their impact on the U.S. economy and industrial base to Congress (Kremer and Sain, p. 79).

The U.S. government at one time provided foreign military financed direct commercial sales (FMF) funding grants to receiver nations given as military aid to foreign governments for the purchase of defense equipment. The aided country then negotiated with U.S. industry for offsets against the purchases. Those offsets provided a second pay-back and could include the export of jobs and technology. But, now the U.S. government prohibits offsets associated with such weapons procurement grants.

Though there is no agreement in terms of what constitutes a successful offset agreement, with nearly fifty years of trying various ways to implement offset agreements, there is now enough experience in the field to be able to identify the characteristics and conditions that will likely lead to a successful program when one is initiated. Hsiung has identified some well-defined characteristics of successful offset programs. First, the purchasing country must be motivated from a long-term perspective to acquire technology and strengthen its economic and/or political position. Second, it is important to recognize the advantages and disadvantages of employing offsets are different for each country. It depends on the political and economic environment as well as the industrial infrastructure of each country. Another characteristic of successful offset agreements is seen in that negotiations to acquire the benefits from an offset agreement depends heavily on the purchasing country's buying power. And, last, a purchasing country's government procurement policy and behavior must be linked to the offset agreement to provide a basis for promoting the country's further economic development (Hsiung, p. 11). The first of these, the purchasing country's motivation for a long-term commitment is also recognized by others as an important factor for success (Kapstein, p. 657). In light of the fact offset agreements have eroded the second and third tier subcontractors and vendors, the U.S. government has issued statutes and regulations that limit the ability of foreign contractors to sell defense items to the U.S. government (Eisenhour, p. 31). This should go far in correcting the problem with offsets' negative impact on the U.S. industrial base.

Conclusion

Notwithstanding the disadvantages of offsets, there appears to be enough U.S. government political motivation to continue providing or financing them, especially given the move to seek solutions to some of the disadvantages, cost being one of the biggest. In Europe, uncertainty over NATO's future will dictate the nature of the relationship between the U.S. and European defense aerospace industries. Increased economic globalization and increasing nationalism will also form the nature of that competition and cooperation (Isby, p. 20). Some of the major advantages of offsets were discussed in this paper along with some of the major disadvantages. Some of the most important disadvantages are cost effectiveness, the state of procuring nations' economies, their negative effects on U.S. employment, and technology transfer to potential enemies.

In addition, some improvements in how offsets are handled that could mitigate these disadvantages were discussed. "Offsets positively impact interoperability, alliances, training, and modernization; they have a substantial positive impact on the industrial base and economies of scale (Petty, p. 76)."

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